CPS 130 Homework 4
Recurrences

due Wed May 22nd

Write and justify your answers in the space provided.[1]

1. (CLRS 4.2-2) Argue that the solution to the recurrence

$$T(n) = T(n/3) + T(2n/3) + n$$

is $\Omega(n \log n)$ by appealing to a recursion tree.

Give asymptotic upper and lower bounds for the following recurrences. Assume T(n) is constant for $n \leq 2$. Make your bounds as tight as possible, and justify your answers.

2. $T(n) = T(n-1) + n$

3. $T(n) = T(\sqrt{n}) + 1$

4. $T(n) = 2T(n/2) + n/\lg n$

5. $T(n) = T(n-1) + 1/n$